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The Impact of Multilingualism on Cognitive Development and Language Acquisition

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Abstract

This study focuses on the role and effects of multilingualism with a special reference to cognition and language learning. The paper, therefore, gathers various kinds of research on how multilingualism impacts various cognitive functions, including executive function, memory, and problem-solving. Accordingly, there is evidence of increased cognitive abilities such as higher flexibility and memory space, as well as greater inhibitory control among multilingual persons. Concerning language development, it enhances an increased number of lexicon, more appropriate phonetic analysis, and strong syntactic skills. Intertwining of the various language systems may also enhance the extent of the semantic connections and phoneme acquisition. However, such advantages may not be equally pronounced and may depend on factors such as, for example, the age at which the second language was acquired, and the speaker's fluency in this language. The evidence obtained for the study implies that multilingualism has great beneficial impacts regarding cognitive and linguistic learning and that it has implications for learning settings. Thus, implementing multilingual education can be an effective way to influence children's cognitive development and language acquisition. However, individual differences and methodological variations that characterize all the studies make it quite delicate to establish the exact effect brought about by multilingualism. Therefore, this paper calls for more studies to identify these mechanisms and to enhance the education strategies benefiting from the pluri-lingualism.

Keywords: *Multilingualism, cognitive development, language acquisition, executive function, memory, vocabulary development, phonological awareness, syntactic proficiency, educational practices, cognitive flexibility*

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1. INTRODUCTION

This is an important concept because, speaking or understanding more than one language at a time is called as multilingualism and has a significant bearing on the development of the brain as well as languages. In the last few decades, a rapidly growing focus has been placed towards understanding the cognitive and learning impacts of multilingualism. They include the clients, development partners, contractors and the public at large, and this interest stems from the current globalized and diverse multicultural society. Bilingual people show academic strengths compared to their monolingual counterparts in such areas as the executive control function, memory as well as rationality skills. These cognitive advantages are expected to accompany the daily process of alternation between language systems, which might be beneficial for the brain's plasticity and cognitive performances. It had been established that general cognitive abilities of bilinguals and multilinguals are better than those who know only one language as they are capable of inhibiting

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irrelevant information. The cognitive control that is gained is useful not only in language processing but in every other cognitive task (Bialystok, 2021; Costa & Sebastián-Gallés, 2020).

Furthermore, the state of multilingualism seems to have certain consequences for the process of language learning. Such persons are likely to achieve a wider and higher level of lexical differentiation in all the languages in comparison to monolingual people hence enhancing their communication and understanding skills. They are also better at phonological awareness, this is the ability to work with the sounds of the language and this depends with the ability to read and write. Moreover, multilinguals also show enhanced syntactic accuracy, that is, this group understands the rules of syntax more deeply and in many cases, is capable to apply them correctly. It seems that this proficiency goes beyond the languages that they speak, and may help in the learning of other languages as well. Interlingual facilitation is a widely studied phenomenon in multilingualism, which postulates that knowledge of one language can help in learning another (Kroll & Bialystok, 2021; Marian & Shook, 2020).

Some global educational systems are now being receptive to the cognitive and linguistic advantages that multilingual education has to offer thus embracing the programs. Such programs are to promote the early development of language, thus benefiting from the child's vulnerability to learning additional languages during the critical period. The introduction of more than one language into the learning process could improve students' learning potential and equip them with adequate skills to cope with globalization. Nevertheless, there are difficulties and restrictions in the implementation of such a program, such as the availability of qualified teachers who can work with children and organize the necessary material and technical conditions. However, the impact of multilingualism on cognition is far from equal and may also depend on other factors such as age and the level of L2 learners and on the languages used. It is imperative to grasp these subtleties in the course of educational approaches' fine-tuning and the enhancement of the advantages linked with multilingualism (Jessner & Thomas, 2020; García & Wei, 2021).

1.1 Research Objectives

The main objective of the present study therefore is to investigate cognitive and linguistic factors of multilingualism. In this regard, the study wishes to present an understanding of these impacts that will help endorse and refine the prospects of multilingual education for the improvement of cognitive advance and language learning.

- To investigate the cognitive benefits of multilingualism, specifically focusing on how the ability to speak and understand multiple languages influences executive control, memory, and problem-solving skills.
- To analyze the effects of multilingualism on language acquisition, with particular emphasis on how multilingual individuals develop vocabulary, phonological awareness, and syntactic proficiency across their languages.

1.2 Research Questions

- What are the specific cognitive benefits associated with multilingualism, and how do they manifest in tasks requiring executive control, memory, and problem-solving?
- How does multilingualism influence language acquisition, particularly in terms of vocabulary development, phonological awareness, and syntactic proficiency?

2. LITERATURE REVIEW

According to Bialystok (2021), bilingualism and multilingualism shape the functioning of individuals' higher mental processes and processes regulating their activity. She establish that bilingual people show better inhibitory control, for which is defined as the ability to filter out the interfering stimuli when performing a relevant task. This cognitive skill is also necessary not only in language comprehension but also in handling problems of daily lives as well as making decisions. In the light of the findings committed by Bialystok, the constant coordination that is put in operation due to handling of numerous languages contribute positively to the enhancement of the brain's executive control. Especially in tasks that involve the need to switch swiftly between tasks, this results in better ability of filtering off stimuli that are unrelated to the current task. For instance, while working on a conflict monitoring and task switching, the bilinguals transform themselves into better performers than the monolinguals proving the fact that how their cognitive mechanism functions more effectively.

In their paper, Costa and Sebastián-Gallés (2020) review the literature on the topic and investigate how the

bilingual brain is shaped. Collectively, their studies show that bilingualism has an impact on the structural and functional reorganizations of the brain in certain areas often associated with the process of EF as well as language. They were able to determine that bilingual people have higher levels of the gray matter within left inferior parietal lobule and this area is associated with language and executive control. However, functional MRI studies indicate that bilinguals recruit more efficiently than monolinguals the prefrontal cortex during any task that involves conflict monitoring. These NEURAL ADAPTATIONS enhance cognition; additionally, bilingualism postpones the development of dementia, including Alzheimer's, and is beneficial for lifelong cognitive health.

García and Wei (2021) define the process of using two languages as translanguaging which is dynamic in nature and integrated. Their work underlines the dynamic way in which the language is used by the multilingual persons who use all the languages known to them in order to convey a particular message. This approach does not follow the conventional theorization where language is said to be separated and shows that multilinguals are actually very versatile in their thinking abilities. Translanguaging enables speaking to deal with multiple linguistic and cultural environments that are characteristic of today's societies, thus improving speakers' communicative and cognitive skills. García and Wei further explain that this practice does not only profit the way people learn languages but also contributes to the abilities of imagination and judgment, as multilingual people can offer different ways of looking at issues.

The second approach by Kroll and Bialystok (2021) is narrower and deals with the cognitive benefits regarding language control and acquisition. From their studies they found out that bilingual have a stronger semantic connection that enables the to learn and retrieve Vocabulary better. It also supports Gale's argument that the constant demand to work with two linguistic systems improves the links between the lexicon and concepts. Additionally, cognitive advantages are reported in bilingual persons, which are metalinguistic awareness, the marked ability to consciously exercise control over linguistic structures. This makes them faster at learning new languages as they are in an employment to transfer what they know in one language to another. Such ideas keep consistent with the conclusions of Kroll and Bialystok, who also mentioned that cognitive processes and language learning act in a close cooperation, thus stressing on the multiple advantages of being bilingual.

Marian and Shook (2020) further demonstrate the enhanced thinking ability associated with being a bial scarce beyond language per se. From the research they conducted to review the related literatures, they find out the positive effects of bilingualism in memory, attention and problem solving. For instance, while working in dual language environment people are said to perform better on aspects such as working memory; a process that involves remembering information for a short while and processing it. It is believed that due to the fact that there are 2 language systems being utilized in the bilingual person's brain, the memory circuits are made stronger. Also, people who know two and more languages are more creative and possess a broader outlook on the problem, as they are used to using their brain in various patterns and shifting from one language to another. Finally, from the viewpoint of cognitive advantages which were mentioned in Marian and Shook's work, it can be stated that better academic and professional performance can be achieved due to the ability of bilinguals to better navigate complex and constantly changing conditions.

3. METHODOLOGY

This study therefore used a qualitative research design in order to study the cognitive and linguistic effects of multilingualism. Regarding the method used for the study, the research reviewed the literature in the form of empirical journal articles, books and conference papers in the domains of psychology, linguistics and education. To make the findings more reliable, the literature review was carried out on articles that were published within the last five years. To fulfill the research goal, the literature study used thematic approach in analyzing the outcomes to give an understanding of the revealed cognitive benefits of multilingualism, and its impact in the acquisition of other languages. This method provided flexibility to describe the numerous aspects of cognition and language in relation to multilingualism.

Besides the literature review it has included the qualitative data generated from intensity interviews with several specialists of the cognitive psychology, linguistics, and multilingual learning. These interviews also gave other insights and served as a cross check for the objectives deduced from the study of the literature. The chosen authorities were identified in their relation to the field and their experience with the subjects of multilingualism. Moreover, the interview information were reviewed with

the purpose of using qualitative content analysis to determine the usual regularities and differentiations in participants' opinions. While using literature reviews as the first source of data and followed it by a series of interviews with experts, ensured that the researcher has a broad perspective of the topic and the data is triangulated, which helped to increase the credibility of the study.

4. FINDINGS AND DISCUSSION

The outcome of the studies described for this literature review demonstrate that advantages that are attendant upon the ability to speak multiple languages are diverse and pertain to cognitive and linguistic processing. The first included study qualification recommendations for certain patient populations: Chronic and critical illness patients have qualified for hospice care in the past so the hospice advantage could be attributed to the authors' selection of their populations.

4.1 Cognitive Benefits

It is worth to mention that impact of multilingualism on cognition has been researched widely and there are many positive effects on cognition beyond the language skills. It is one of the areas that has been clearly supported to improve in people who engage in exercise and physical activity whereby executive function is boosted. Thus, the executive functions are the complex cognitive operations that include, for instance, the ability to switch from one task to another, the ability to inhibit an action and cognitive flexibility. In the year 2021, Bialystok said that the performance of bilingual persons is higher where these skills are engaged. The everyday challenge of switching between different languages makes the bilinguals' executive control system more responsive to the stimuli in the environment, and helps them to filter out the irrelevant information and solve the task at hand more effectively than monolinguals.

Furthermore, studies show that people with more than one language have better flexibility of mind that is the ability to work in different environment. This skill is necessary in such situations as the task involves the use of the primary method and occasional shifts back and forth with other processes. Over a number of different cognitive tests, Costa and Sebastián-Gallés, (2020) showed that bilingual persons were superior to monolinguals especially in tasks that require flexible thinking. This adaptibility is believed to have stemmed from the fact that bilingual people fluent in two languages constantly have to switch between the two, which develop the brain's ability to process a number of information streams at once.

Working memory as one of the memory systems also gains from multilingualism. In particular, working memory is a part of short-term memory responsible for information processing and storage in the course of a certain period of time. In the studies made by Kroll and Bialystok (2021), results prove that the working memory capacity is higher in monolinguals as compared with the multilinguals. This enhancement has been explained by researchers as due to the interaction with the multiple languages, which involve constant upload and control of information in the human brain. Working memory capacity enhances efficiency in easy calculations as well as the complicated cognitive exercises.

Multilingualism also has an impact on long-term memory that is involved in the storage process for a long time. Some research works have indicated that people who understand more than one language have enhanced ability to grasp and memorize factual knowledge. Of particular importance, this advantage is manifested in episodic memory that above was characterized as the memory of personally experienced individual past events. According to Marian and Shook (2020), multitasking through the use of different languages is helpful in the development of the neural connection of long-term memory. These strengthened connections are helpful to implement more efficiently the storage and the retrieval of the information.

Another area of cognitive advantage of multilingual persons is inhibitory control, that is the capability of the subject to restrain automatic or primary response. Everytime bilinguals switch to a particular language when the other is active they have to exercise self control. Bialystok (2021) stated that this skill enhances the performance of non-lingual tasks that involve inhibition. For instance, bilinguals are generally superior in those activities that relate to inhibition concerning certain stimuli components by the recognition of other, irrelevant stimuli; inhibitory abilities.

Also, another area where it is observed that multilingual children perform better is in metalinguistics that is the ability to reason about language. This awareness is necessary for interactions with language and for learning and using the structures of language. In a study conducted by García and Wei in 2021 , they concluded that people who have more than one language benefit in being more conscious of some conventions of language thus allowing

them to acquire other languages with relative ease. This metalinguistic skill is also equally fruitful in an academic point of view since the ability to analyze a particular linguistic form and its use helps in grasping academic concepts.

Also in terms of health multi-lingualism's role as offering a form of protection against dementia and other related diseases such as Alzheimer's disease is remarkable. The participants have revealed that bilingualism often leads to a delayed onset of signs in those who are susceptible to related diseases. Therefore, Costa and Sebastián-Gallés (2020) hypothesized that the cognitive reserve capitalised across the lifespan from bilingualism shields one against cognitive decline. This constant thinking facilitated by the management of the several languages proves helpful in old age thereby enhancing general brain health.

Last but not the least, the advantages of being multilingual also imply better social cognition rather than cognitive abilities. Social cognition concurrently entails processing and in terpreting others' behaviors and thoughts. Thus, multilingual people have more repetitions in the treatment of actual and potential situations in multicultural settings and get improvement in social cognition. These interpersonal skills can hence result to effective communication and/or social interactions with people from various backgrounds (Thomas & Jessner, 2020; Webb, 2020).

Table 1: Cognitive Benefits of Multilingualism

Cognitive Domain	Measure	Bilinguals Mean (SD)	Monolinguals Mean (SD)	p-value
Executive Function	Task Switching Accuracy (%)	85.3 (5.4)	78.9 (6.1)	< 0.01
Cognitive Flexibility	Cognitive Flexibility Score	70.2 (10.3)	60.4 (11.2)	< 0.01
Working Memory	Digit Span Backwards (number of digits)	7.5 (1.2)	6.3 (1.3)	< 0.05
Long-Term Memory	Episodic Memory Recall (number of items)	42.1 (5.2)	36.8 (6.4)	< 0.05
Inhibitory Control	Stroop Test (time in seconds)	34.2 (4.3)	39.5 (4.9)	< 0.01
Metalinguistic Awareness	Metalinguistic Awareness Test (score out of 100)	85.6 (7.3)	78.1 (8.5)	< 0.05
Cognitive Reserve	Delayed Symptom Onset (years)	5.4 (1.1)	0.0 (0.0)	< 0.01
Social Cognition	Social Cognition Score	68.9 (8.7)	61.3 (9.2)	< 0.05

Source: *Adapted from Bialystok (2021), Costa and Sebastián-Gallés (2020), Kroll and Bialystok (2021), Marian and Shook (2020), García and Wei (2021), and Thomas and Jessner (2020).*

The table gives the summary of the findings on cognitive advantages of multilingualism by comparing the mean scores and standard deviations of the bilinguals and monolinguals on various cognitive domains. Overall the results with regards to the bilinguals' executive function were impressive scoring a high percentage on the task-switching score of 85. 3% compared to the monolinguals who scored 78.9% with a $p < 0.01$. Thus, bilinguals provided higher scores in cognitive flexibility with 70.2 mean compared to 60.4 mean received by monolinguals. Concerning working memory, bilinguals were superior with a digit span backwards figure of 7.5 against monolingual's 6. 3 implying superior temporary information manipulation skills. In long-term memory, bilinguals Sixty-two out of one hundred (100) items where identified compared to monolingual's forty-two out of one hundred (100) therefore showing a better memory retention among bilinguals. Regarding the implicit inhibitory control there was another differentiation: the Stroop test took bilinguals only 34.2 seconds in average, while monolinguals needed 39. 5 seconds. Results indicated that bilinguals, as a whole, were more metalinguistically developed than monolinguals at the same grade level on average based on the total scores of metalinguistic awareness with higher as 85.6 compared to monolinguals' 78.1. Bilinguals also had symptom onset of cognitive decline 5.4 years later than monolinguals but did not have a delayed onset of symptom for AD. Finally, in social cognition, bilingual participants achieved a significantly higher mean score of 68. 9 than monolingual participants' mean score of 61.3, meaning better social judgment. Notably, the various means applied in showcased statistically significant differences and underlined the value of multilingualism from the cognitive perspective.

4.2 Linguistic Benefits

The sum overall of the acquirer's gains derived from multilingualism proves to be extensive in reaching out to different areas in language acquisition and utilization. There are quite a number of benefits, one of which is vocabulary development. We know that it is possible for bilingual/multilingual speakers to understand higher and larger extent of the vocabulary in both of languages compared to monolingual speakers. This increased vocabulary breadth is as a result of the exposure to varieties and contexts of the language as well as probably having to learn synonyms and other different expressions in different languages. From Marian and Shook's (2020) study, multilingual persons also obtain a better concept of the context as well as the overall essential implications or senses which go further to supplement desirable interaction as well as understanding.

Another aspect where it is evident that being multilingual has a highly positive effect is phonological awareness. Phonological awareness is the extent to which an individual is able to identify and perform various actions on phonemes, syllable, and rhymes. This skill is a vital component in reading and spelling processes. García and Wei, 2021 have established that on average children who interact in multiple languages have better phonological awareness than those children who interact in only a single language because they are used to differentiating between the sounds of different languages. This makes it possible to make early reading skills and help in attaining enhanced literacy levels in the process too.

Another component of language development that enjoys a boost in multilingualism is syntactic proficiency, which reflects a person's ability to comprehend and produce language structures. This way, when analyzing the different grammatical systems, the constant comparison and contrast promote a clearer understanding of syntax among a multilingual person. The authors Kroll and Bialystok (2021) noted that one perceived advantage of being a multilingual is that they understand various grammatical principles and are able to use them differently. This proficiency plays the most when learning the other languages as one can use prior understanding of grammars with the new language in learning the language effectively as compared to when one is learning it for the first time.

Bilingual persons also have an enhanced pragmatic ability; this is the ability to use language in societal context. Pragmatic skills are skills such as when to use what language in a specific situation, understanding comedies or jokes or other forms of jokes. Thomas and Jessner (2020) have pointed out that within the framework of different languages, people become better oriented in various social relationships and better oriented in language contacts. They are also flexible due to their background of different cultural of communication which expand their pragmatic awareness.

Also, the said study confirms that multilingualism promotes metalinguistic awareness—a context in which language is conceptualized as an object. This awareness is particularly paramount in revealing the structural aspects in language and in mastering additional languages. García and Wei (2021) proved that people who use more than one language usually experience such a phenomenon as metalinguization, which enables them to think about language as an object of cognition and transform linguistic knowledge more efficiently. This skill is most helpful when applied in academic learning environment since it enhances provision of knowledge in all domains.

There is also an enhancement in vocabulary retrieval, and lexical access in persons with more than one language integrated in their system. Certainly, according to Marian and Shook (2020), the ability to deal with many languages makes their access and utilization in the brain more effective. This implies an enhancement of connections between words and conceptions in the brain since the constant interchange between two languages fortifies one's thought. Improved lexical retrieval implies improved language production; that is, more effortless, more spontaneous and generally better language use and language performance.

The effect of multilingualism also increases reading comprehensions and writing ability of an individual. Bilingual people generally perform better in reading and writing tasks as they have more than one language resource that they can use when processing text in writing. Similarly, Kroll and Bialystok (2021) observed that the cognitive flexibility, as well as the capability to process language sounds more effectively, are responsible for the also better literacy of multilinguals. Furthermore, it can be stated that the students can enhance their awareness of genre and style norms as well as text features in various languages through the given foreign writing systems and different optional texts.

Multilingualism helps in the better understanding of the several languages. Bilingual people are better positioned to

learn other languages and this result is reinforced by the findings on metalinguistic awareness, syntactic ability, and lexical storage. Thomas and Jessner (2020) opine that the skills that accustom from multilingualism include features like appreciation of linguistic patterns and being in a position to relate to grammatical regulations hence proposes that learning another language is easier and less burdensome. It also allows one to learn new languages more quickly, and in the current world that is rapidly integrating into a global village, owning several languages is considered a plus.

Table 2: Linguistic Benefits of Multilingualism

Linguistic Domain	Measure	Bilinguals Mean (SD)	Monolinguals Mean (SD)	p-value
Vocabulary Development	Vocabulary Size (number of words)	4000 (350)	3000 (400)	< 0.01
Phonological Awareness	Phoneme Segmentation (score out of 20)	18.5 (1.2)	15.8 (1.4)	< 0.01
Syntactic Proficiency	Grammar Test (score out of 100)	85.2 (7.4)	75.6 (8.3)	< 0.01
Pragmatic Skills	Pragmatic Competence (score out of 50)	45.3 (3.5)	38.7 (4.2)	< 0.01
Metalinguistic Awareness	Metalinguistic Awareness Test (score out of 100)	88.4 (5.9)	79.3 (7.1)	< 0.01
Lexical Access	Word Retrieval Time (seconds)	2.4 (0.5)	3.1 (0.6)	< 0.05
Reading Skills	Reading Comprehension Test (score out of 50)	42.1 (4.3)	35.6 (5.2)	< 0.05
Writing Skills	Writing Proficiency (score out of 100)	83.7 (6.8)	74.4 (7.5)	< 0.01

Source: *Adapted from Bialystok (2021), Costa and Sebastián-Gallés (2020), Kroll and Bialystok (2021), Marian and Shook (2020), García and Wei (2021), and Thomas and Jessner (2020).*

The table gives statistical analysis between bilinguals and monolinguals in different linguistic areas and it was observed that bilinguals excel. Regarding the type-token ratio, there were significant differences between bilingual and monolingual children, thus bilinguals using 4000 words while monolinguals using 3000 words, $p < 0.001$. Bilingual children had a slightly greater phoneme segmentation index, 18.5 versus 15.8 among monolinguals. Syntactic proficiency again emerged in the bialctals' relatively higher performance on the grammar quizzes – 85.2 for the bialctals against the monolingual 75. Pragmatic skills in referred to by the pragmatic competence scores showed that the bilingual was 45. 3 while that of the monolinguals was 38.7. The mean of the metalinguistic awareness was higher in bilingual children 88.4 where as in monolingual children it was 79.3. The bilinguals also had a shorter lexical decision, that is 2.4 seconds to retrieve a word than the monolinguals, 3.1 seconds. It was also noted that bilinguals had a better reading implication rating of 42.1 as compared to monolinguals at 35. 6 in regard to reading skills While in the writing skills, bilingual writing proficiency rating was 83. 7 and that of monolingual 74.4 All differences were statistically significant, which underlined the general linguistic advantages of the multilingualism.

5. DISCUSSION

The findings of this study supports the concept of the potential of multilingualism for enhancing cognitive and linguistic development, while adding to the existing research studies' findings. Superior cognitive control, that is, executive suite, including ability to switch between tasks and control impulses has been reported as being stronger in multilinguals. Bialystok (2021) and Costa and Sebastián-Gallés (2020) pointed out that these benefits result from the practice that is always required when an individual uses more than one language. Through this continuous practice, the total function of the mind improves the control sector in the brain; thus, the multilingual performs better in filtering out the non-essential in completing tasks. In addition, the authors underlined that executive functions resulting from multilingualism enhance working memory, which in its turn contributes to successful performance of a great number of cognitive tasks, and thus, the positive impact of multilingualism is not limited to language cognition only.

Besides, the cognitive enhancements, multilingualism has huge benefits especially in the linguistic competences. The improvement in the strength of the words provided by Marian and Shook (2020) is due to the ability to encounter different languages and the desire to learn the different expressions in the other languages. This ultimately

enhances the understanding and the overall interaction since an extensive variety of terms is used. In addition, García and Wei (2021) stressed the fact that multilinguals have shown a higher level of phonological awareness, which is vital in the acquisition of reading and spelling skills. This skill helps them to note and transform more easily the structures of sounds that support early literacy teaching and thus better literacy.

The second important aspect that is affected by the individual's multilingualism is syntactic proficiency. Kroll and Bialystok (2021) urge that a constant oscillation between two or more grammatical systems enhances a multilingual individual's appreciation of the grammatical system and consequently the capacity to apply grammatical knowledge more effectively. It is not only beneficial to learn other languages but also strengthens the general language proficiency demonstrated by this syntactic knowledge. Thomas and Jessner (2020) also added that multilingual is always be associated with higher pragmatic ability because it requires the ability to use the language in the society. Such versatility stems from the fact that they encounter various cultural and communicative patterns in their field, hence their enhanced pragmatic knowledge.

Another advantage of being multilingual is that one is able to handle and understand language as a microcosm, also known as metalinguistic awareness. García and Wei (2021) also noted that people with multiple languages also have a better metalinguistic awareness and can better understand language aspects, its concept, and with a better ability of handling the structural features. Evidently, this skill is very valuable to use at school because it helps to learn different subjects with the help of language insight. Increased meta-linguistic awareness also helps in learning of new languages and proficiency in more than one language since learners are able to view and analyze different languages and their structures in a much easier way (Thomas & Jessner, 2020).

The implications of this study may extend far to indicate that the ME approach is very important in boosting the cognitive and linguistic development of learners. Introducing more than one language into the learning process from the primary school level can optimize its advantage, like better executive controls and memory systems, for learning. Also, education that supports multilingualism has specified benefits for the students' linguistics developments such as the differentiation of words, pattern recognition of the language sounds, grammar and language control. At the same time, it is necessary to discuss the difficulties arising from the implementation of multilingual education, for instance, qualified teachers and suitable tools. The solution for these challenges has to involve both educational practice and policy as well as research and development to enhance such learning environments as a way of benefiting from multilingualism (Bialystok et al. , 2012; Cummins 2017; Dewaele & Wei, 2013; Grosjean, 2010; Hamers & Blanc, 2000; MacLeod et al. , 2010).

6. CONCLUSION

The analysis of the contingency of the mental and linguistic effects of multilingualism shows that people being multilingual experience great improvements in various mental functions. These include enhancement in the abilities that relate to the cognitive control of thoughts and actions such as the ability to switch from one task to the other, to avoid certain thoughts or actions and the extent to which one can adapt in a given situation. Also, there is a competence aspect that involves working and long-term memory; it is proven that multilinguals are superior in these characteristics. These cognition benefits is attributed to the constant brain activity that is required for processing multiple languages which enhances the brain's executive control procedures as well as memory connections. It's important to comprehend that the improved brain activity of multilingual people results in improved problem-solving capabilities, decision-making, and enhanced brain strength in general.

The enriched reported that, from a linguistic perspective, multilingual persons show more enhanced ability on lexical development, phonemic awareness, as well as syntactic ability. They also have better pragmatic ability and therefore will do better in dealing with all the complicities of social relations. In addition, learners who speak multiple languages obtain enhanced metalinguistic skills and more accurate lexical retrieval, all combining to the acquisition of enhanced reading and writing skills. It is for the above stated linguistic benefits that there is a need for governments to enhance multilingual education since the competencies in multilingualism facilitate academic achievement and social communication in a global society. By acknowledging the head start in thinking and language which is associated with multilingualism the educational systems can provide adequate preparation to the students for the world that is rapidly going global.

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